



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 5  
77 WEST JACKSON BOULEVARD  
CHICAGO, IL 60604-3590

July 17, 2009

REPLY TO THE ATTENTION OF:

**CERTIFIED MAIL  
RETURNED RECEIPT REQUESTED**

**LU-9J**

Mr. Michael Gerdenich  
EHS Team Member  
BASF Corporation  
1609 Biddle Avenue  
Wyandotte, Michigan 48192-3729

Re: BASF North Works – June 2, 2009  
Sediment Characterization/Remedial Evaluation  
Interim Measures Work Plan (IM Work Plan)

Dear Mr. Gerdenich:

In accordance with our most recent discussions regarding both U.S. Environmental Protection Agency (EPA) and Michigan Department of Environmental Quality's (MDEQ) requested modifications to the IM Work Plan, we are taking this opportunity to reemphasize both EPA and MDEQ's position relative to the sediment conditions along the BASF North Works Plant Shoreline. Our goal is to have implemented Interim Remedial Measures by 2010 to address the environmental and ecological hazards associated with the acute toxicity of the high pH in sediments along the shoreline of your North Works, Wyandotte, Michigan Facility.

Notwithstanding the need for further characterization of the high pH in sediments offshore of the facility, the presence of pH levels above 9 in the sediment pore water is in violation of State of Michigan Water Quality Standards and has to be brought into compliance. With respect to the *Sediment Characterization/Remedial Evaluation Interim Measures Work Plan (IM Work Plan)*, EPA accepts the June 2, 2009, IM Work Plan as modified to include the four changes as conveyed in your email correspondence to me on July 9, 2009. Additionally, EPA and MDEQ require the following components be included into the IM Work Plan:

- BASF must prepare a depth-based iso-pH contour map for each depth interval. Each pH map should start with a contour of the sediment locations associated with a pH of 8 and provide an additional pH contour line for every 0.5 pH increase, i.e., have contour lines for locations associated with a pH of 8.0, 8.5, 9.0, 9.5, etc. On each map, the location of the sediment pH results used to draw the contours should also be included.

- 1,2-dichloroethane and vinyl chloride are to be added to the constituent sampling inventory. These constituents exceed the GSI criterion and remain a chemical of concern in the groundwater according to the Tier II Risk Evaluation Summary Report for BASF North Works, January 2008.
- Ammonia should be analyzed in all sediment samples submitted for pH, not just for the benthic community sample locations. This includes both surficial and at depth sediment intervals. For soils/sediments the samples are extracted using ASTM D 3987-04 method and then the extract is analyzed using EPA method 353.2.
- Sediment sample analysis should include chloride.

BASF Corporation's IM Work Plan, state that a basis for evaluation of alternative measures to address sediment concerns is anticipated to include an assessment of the extent to which elevated pH values in the river sediments may affect biota and overlying surface water quality. The strategy outlined does not attempt to address the causation or source of the high pH values, delineate the extent of the pH source or direct efforts to remove or mitigate further hazard. BASF has proposed collection of sediment cores for geochemical characterization to determine specific mineralogy to be determined via X-ray diffraction and X-ray fluorescence analysis (XRD and XRF respectively). While this may be BASF Corporation's attempt at a forensic investigation which is hoped would identify the source and nature of the material causing the elevated pH in the sediments, EPA and MDEQ do not concur with the approach of only doing geochemical analysis on surface "crust" samples. It seems that the mineralogy study as envisioned by BASF would only partially help in determining the nature or the source of the material causing high pH values in the sediments because samples of known Distillate Blow-Off (DBO) are not included.

Furthermore, as conveyed in our letter to the BASF Corporation, dated April 24, 2009, EPA does not object to BASF Corporation's proposed strategies for further data collection, as delineated in your June 2, 2009 IM Work Plan. However, EPA and MDEQ believe that there exist enough scientific evidence to correlate the conditions associated with historical waste handling practices, including the disposal of DBO waste material throughout the approximately 230 acre site, to the resulting high pH levels being found in sediments at varying depths along the site. DBO was a waste material generated from historical soda ash manufacturing operations conducted at the facility from the 1920's to the 1970's. Additionally, EPA and MDEQ believe that the information presented in numerous RCRA Corrective Action Program Documents as well as historic photos submitted over time to the agencies, provides overwhelming evidence to conclude that the material in the river sediments off of BASF Northworks is the facility's DBO material, with additional input to the causation of the high pH, from historic uncontrolled discharges emanating from the facility's soda ash plant.

Should BASF decide to collect sediment cores for geochemical characterization using XRD and XRF analysis respectively, as a way of either confirming or refuting the evidence that the materials in the sediment is DBO from the facility, the agencies would be more agreeable to an approach where sediment cores would be analyzed by a laboratory for geochemical analysis

and compared with samples from known areas of placed DBO material. This strategy may provide better evidence and/or confirmation as to the origin of this material.

Additionally, the IM Work Plan Benthic Community Assessment component may prove to be more of an academic exercise since the results of numerous studies including the Michigan Bay Harbor Studies has conclusively shown that pH levels comparable to those found in the Detroit River sediments adjacent to the BASF facility are toxic to benthos. This component of the IM Work Plan may serve to delineate "outer limits" or boundaries of a remediation area however, but it would not be a primary determinant of the need for a remediation project.

In closing, EPA approves the IM Work Plan with the proposed modifications. BASF Corporation shall begin implementation of the IM Work Plan, according to the schedule proposed, but is also required to submit a final revised IM Work Plan incorporating the accepted modifications. EPA is looking forward to BASF's continued cooperation. Please feel free to contact me should you have any concerns at 312-886-6010.

Sincerely,

A handwritten signature in black ink that reads "Juan Thomas" followed by a stylized monogram "JTA" in parentheses.

Juan Thomas  
Project Manager

cc: Reginald Pallesen, ORC  
Rich Conforti, MDEQ